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ABSTRACT

The development of a systematic method for observing and describing significant aspects of teacher-pupil behavior in an experimental preschool educational program is described. The intent of the observation and description was: (1) to determine the extent to which theoretical principles and stated educational objectives were being implemented in the classroom, (2) to determine the extent to which the enrichment program was being replicated within the project classes, and (3) the identification of teacher-pupil behavior which contributed to the enhancement of cognitive skills. This report presents the summaries of findings for five scales developed in order to describe the prekindergarten program. For a straightforward description of the school day activities a Time Distribution Record was maintained by the classroom observers. Intensive study of the teacher and pupil during the work and play periods was effected by time sampling ratings of child behavior (Location Activity Material Inventory) and teacher behavior (Teacher's Play Period Rating). Records of the type of group lesson taught (story, lecture, or demonstration), and selected aspects of the teacher's style were obtained (Teacher's Observation Scale). Attempts to rate and evaluate the attentiveness of the children during lessons were also carried out (Children's Attention Rating Scale). (Author/CS)

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Observational Techniques in Preschool Classrooms

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Observational Techniques in Preschool Classrooms[1]

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INSTITUTE FOR DEVELOPMENTAL STUDIES

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[1] The observational procedures described in this report represent the collaborative efforts of most members of the Institute for Developmental Studies staff. The observers and researchers who participated directly in the development of the scales included Richard Bloom, Barbara Cohen, Alan Coller, Erhard Eimer, Marcia Goldberg, Dolores Jiminez, Judith Kuppersmith, Beverly Lebeau, Ruthann Markowitz, Maree McArdle, Susan Tiktin, Howard Tillis, Barbara Vick, Judith Yanoff.

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Observational Techniques in Preschool Classrooms

Incorporated in the design and planning of an experimental preschool educational program was the development of a systematic and objective method for observing and describing significant aspects of teacher-pupil behavior. The intent of the observation and description was threefold:

1. to determine the extent to which theoretical principles and stated educational objectives were being implemented in the classroom,
2. to determine the extent to which the enrichment program was being replicated within the project classes, and
3. the identification of teacher-pupil behavior which contributed to the enhancement of cognitive skills in children.

The previous observational studies of teacher-pupil behavior were conducted for the most part in higher grades. Extensive reviews of such studies were compiled by Barr and his associates (1961) and Flanders (1965). At the preschool or nursery level, the focus of behavior description in the past has been upon the socialization processes of the young child, aggressive behavior, and dominant or integrative behavior. (Sears, et al., 1953; Walters, et al., 1957; Anderson, 1939; Patterson, 1963). Behavior more directly related to educational processes was not a major concern until the recent development of preschool educational programs for economically deprived children. It was therefore necessary to design and construct a series of observational and behavior rating scales which would yield measures of those aspects of the preschool programs which most directly contributed to the development of cognitive abilities.

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The variables assumed to be of importance in the educational process ranged from straightforward, easily quantified measures of classroom time devoted to curriculum activities to subtle, and complex personality characteristics which defied precise definition. The approach to the development of the rating scales placed major emphasis on overt, directly observable behavior.

An objective of the overall project entailed the creation of a model enrichment program which would serve as a guide for other institutions seeking to establish similar programs. A primary goal set for the observation program was the determination of the degree to which the theoretical training objectives transmitted to the nursery school teachers were being implemented in the classroom. During training seminars, when educational techniques were discussed and planned, the need for standardization of the curriculum among the experimental classes was also stressed and an "adequate" degree of uniformity anticipated. A second purpose of the observations therefore was the measurement of the extent to which the curriculum could be replicated within the experimental setting.

It was assumed that the enhancement of cognitive skills of the children necessitated maximizing the amount of classroom time devoted to explicitly defined educational objectives. It was further assumed that such activities could be best promoted by training the teachers to devote as much time as possible to teaching. The observations, thus, sought to measure the amount of time teachers spent in teaching in both group lessons and in individual tutorial sessions. Questions concerning the most effective approach to teaching at this age level (individual versus group) were postponed for future study. The observations alone could not provide an

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adequate direct test of this problem. Some aspects of the teacher's style were studied which did yield suggestions regarding effective teaching characteristics.

This report presents the manuals and summaries of findings for five scales developed in order to describe the prekindergarten program. For the straight-forward description of the school day activities a Time Distribution Record was maintained by the classroom observers. Intensive study of the teacher and pupil during the work and play periods was effected by time sampling ratings of child behavior. (Location Activity Material Inventory) and teacher behavior (Teacher's Play Period Rating).

Records of the type of group lesson (story, lecture or demonstration) taught and selected aspects of the teacher's style were obtained. (Teacher's Observation Scale). Attempts to rate and evaluate the attentiveness of the children during lessons were also carried out. (Children's Attention Rating Scale).

Time-Distribution Record (TDR)

The most direct and gross description of the enrichment program was obtained from a straightforward record of the time devoted to the various classroom activities. The TDR was designed to maintain a systematic record of these daily activities. Initially, curriculum summaries provided the basis for categorizing the events taking place in the preschool class. Three major groupings were derived:

1. Child-Centered Activities, 2. Teacher-Centered Activities, and 3. Routines and Snack Time.

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Child-Centered Activities

In these activities the children functioned with relative independence in directing their individual projects. This gross category was subdivided into the Work and Play Period (indoors), the Outdoor Play Period, Informal Reading, and the Rest Period. During the Play Periods the children may engage in individual play or group games which may or may not be assigned by the teacher. The teacher worked with individuals or small groups or engaged in activities which did not call in interaction with the children. The Informal Reading Activity consisted of children independently looking at books generally while sitting on the floor or rug. Such activity may have been scheduled on a regular basis or may have occured while children were waiting for another type of activity. The Rest Period included lying on the floor mats or resting at tables.

Teacher-Centered Activities

In these activities the teacher was the focus of attention of the whole group of children. In order to be classified as a teacher-centered activity more than half of the children present were in the group being addressed by the teacher. Included under this major category were the following sub-groupings:

Circle Time. Activity which entailed formal teaching. It took the form of a lesson, lecture, or discussion. The content of the lesson or discussion was identified by the observer.

Songs, Quiet Games. These included finger-play games, singing, listening to records with no accompanying physical activity.

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Music, Rhythms. These included playing instruments, marching, dancing, accompanying rhythm records with appropriate activity. Gross motor activity distinguished this category from the abovementioned Songs category.

Story. A story read or told to the whole class by the teacher. The observer specified whether the story was read from a book or told to the class.

Snack Time Lesson. This category is similar to Circle Time described above, except that it occured during snack time and generally was related to the foods being served.

Routines

Any time taken up by the class, not an isolated individual, no matter how short, which was devoted to making a transition from one activity to another, dressing, undressing, lining up, washing hands, clean-up, preparation for a snack, toileting of the group, etc. Snack Time which did not include a lesson was considered a necessary but not a primarily educational activity and was grouped with routines. This activity began when the children were seated at the tables and ended when the majority of children had finished eating, cleaned up, and were about to begin another activity. The snack time lesson was excluded from this category.

Miscellaneous

These included unique or unusual activities many of which took place out of the classroom such as walking to a store, a fire-drill, library book sign-out time, etc.

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Unfilled Time

This category accounted for late starts or classes dismissed early. The observers were instructed to account for all time during which the class was scheduled to be in session (9 A.M. through 12 noon). There was little difficulty in identifying the start of the sessions, but the dismissal time was not always precisely identifiable. Some teachers permitted parents to pick up their children as early as 15 minutes before noon; others were most exacting and punctual in setting dismissal time. In those cases where dismissal time was not clearly identified, the observer noted the time of dismissal as that point at which one-half of the class had been taken home by their parents. A similar rule for determining the start and finish of transitions was used by the observers when the teacher did not announce the activity. For example, after coming in from outdoor play, children undress and then proceed with informal reading. When one-half of the children were seated with books, the transition routine (undressing) was considered terminated.

Rating Procedure

Initially, observations had been scheduled to obtain 20 observation days per class. The observer spent the entire "day" (3 hours) with the class, recording the time each activity began and ended. A sample record sheet is appended (Appendix A). Days of the week were to be rotated so that each day of the week would be represented equally. Scheduling difficulties did not permit adherence to this plan. For example, class trips, teacher or observer illnesses made it necessary to cancel scheduled days. In addition, an emergency evacuation of the Institute building, resulted in

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the catastrophic loss of a half-year of observations in two classes. In all, 16 to 20 observation days were obtained in classes A, B and C (full year) and 8 to 10 (first half of the year) in classes D and E.

Reporting of Observations

Although teachers were requested to ignore the observers and carry out their activities in their usual manner, the observations did affect the curriculum. Bi-weekly meetings with teacher supervisors took place to feed-back information obtained from observations to the teachers. Such conferences were intended to contribute to the standardization of program activities among the five classes. Critical incidents reflecting good teaching practices, as well as problem areas, were also discussed. Informal discussions between individual teachers and observers did take place in addition to the conferences.

Observers were cognizant of the pressures placed upon teachers in the experimental program. Subjective or premature evaluations by observers were minimized by the types of data collected since most observations consisted of objective counts of bits of behavior.

Results

The mean daily amount of time devoted to each activity and its equivalent percentage of total time were calculated for each school for the first and second halves of the academic year. Analyses of variance were utilized to test for differences between time periods (first and second half) and between the three schools (A, B, and C for which there were complete data) for each of the activities. Although some changes

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In time devoted to activities were anticipated from the first to the second half of the year, the program objective had been to maintain a standardized curriculum among the classes so that differences between schools were not desired. Significant differences ($p < .01$ level) were demonstrated between the first and second half of the year for Outdoor Play and between schools for Outdoor Play and Circle Time, Story Time, Routines, Unfilled Time, and Snack Time and Snack Lesson. The latter two categories showed significant interaction effects as well. Changes took place between first and second halves of the year in opposite directions for different schools.

The observations for all classes over the entire school year revealed that the largest portion of time (40%) was devoted to Child-Centered Activities. These were activities in which the child worked and played at tasks with relative independence. It was during this period that the teachers engaged in individual tutorial activities. Approximately one-quarter of the school day was devoted to group activities led by the teacher and 27% of the time was devoted to necessary routines such as transitions between activities, dressing, toileting, and eating.

TABLE 1

Mean Percentages of Daily Time Devoted to Major Activities
For the First and Second Halves of The School Year

ACTIVITY	First Half (5 Classes)	Second Half (4 Classes)
Child-Centered	41.0%	47.3%
Teacher-Centered	25.6%	24.5%
Routine & Snack	29.2%	24.5%
Other	4.0%	3.5%

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The time devoted to the various activities during the second half of the year showed changes essentially in Child-Centered Activities which increased from 41.9% to 47.1% of the time, and in routines which decreased in time needed from 29.2% to 24.5%. The mean percentage of time devoted to various activities during the first and second halves of the school year are presented in Table 1. The former change was attributable largely to the significant increase in time devoted to outdoor activities made possible by warmer weather. It was anticipated that the time needed for Routines would decrease, reflecting in part the warmer weather (less time needed for dressing) and some learning of classroom procedures which permitted speeding up of transitions between activities. Such a trend is suggested. There was also a tendency for the relatively small amount of unfilled time to diminish from the first to second half which may have reflected the effects of feedback of information from the observers to the teachers.

Despite attempts to standardize and duplicate the curriculum in all classes, considerable variability existed among the five classes in the time spent in various individual activities. These differences appeared to be attributable to teacher idiosyncracies and characteristics of the physical facilities. Schools A and E were old buildings (Pre World War II), whereas B, C, and D were new schools with outdoor play yards for young children.

The time devoted to the Indoor Play Period was fairly constant among the five classes during the first half of the year, ranging from a low of approximately 69 minutes (27%) to a high of 96 minutes (31%)

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per day at School B and School A, respectively (See Table 2). With regard to outdoor play there were considerable and significant differences among schools. The old schools had little or no outdoor play activity during the first half of the year. (It should be noted, of course, that this period includes much of the winter season.) At the newer schools, however, between 20 and 31 minutes were devoted to outdoor play. Apparently attractive outdoor facilities will be used in spite of cold weather. However, at School B the category Outdoor Play was extended to include the use of the indoor gym in inclement weather. Although this was technically indoor activity, the materials and games were those ordinarily used outside.

In four of the five classes between 7 and 10 minutes of each day were devoted to Informal Reading in which the child selects a book to "read" by himself. One teacher (School C) frequently omitted an informal reading period. Rest periods were infrequent during the first half of the year and disappeared almost completely during the second half. (See Table 3 for second half of year time percentages.)

The over-all time devoted to Teacher-Centered Activities was relatively constant among the five classes during the first half of the year. There was however, considerable intra-class variability in the manner in which the teacher directed such group activities. Although it had been the intent of the program to present formal group lessons to each class and to read or tell a story to the children every day, a number of teachers omitted the lesson or the story or both from their daily curriculum during the days observed. Two teachers (Schools D and E) made no

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TABLE 2

Percentage of Classroom Time Devoted to Daily Activities
For the Five Classes for the First Half of the Year

(Nov.-Feb., 1984-85)

SCHOOL	A	B	C	D	E
Child-Centered Activities					
Play - Indoor	31.0	26.7	29.4	27.2	29.1
Play - Outdoor	0	16.7	11.4	11.0	2.5
Informal Reading	4.5	5.5	.2	4.0	4.3
Rest	.7	0	0	.5	.3
Total Child-Centered	36.2	48.9	41.0	43.0	36.2
Teacher-Centered Activities					
Circle Time	10.4	5.7	7.0	12.1	13.7
Quiet Games	3.0	2.9	1.3	4.4	1.3
Routine	7.8	6.9	7.1	7.4	5.2
Snack	2.5	5.7	7.1	2.0	3.7
Small Lesson	1.0	3.1	1.7	0	0
Total Teacher-Centered	24.7	24.3	24.2	25.9	23.9
Snack	8.2	3.0	7.6	5.6	6.4
Routine	26.8	22.4	16.0	22.0	28.9
Total	35.0	25.4	23.6	27.6	35.3
Miscellaneous	3.9	0	8.0	3.8	1.0
Unfilled	.2	1.4	3.2	0	3.5

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TABLE 3

Percentage of Classroom Time Devoted to Daily Activities for Three Classes for the Second Half of the Year

(March-June, 1964-65)

SCHOOL	A	B	C
Child-Centered Activities			
P.P. Indoor	28.2	23.9	29.1
P.P. Outdoor	6.4	21.7	20.3
Inf. Rdg.	5.3	4.0	3.6
Rest	0	.1	0
Total C.C.	39.9	49.7	52.2
Teacher-Centered Activities			
Circle Time	12.4	6.6	4.8
Quiet Games	1.5	2.4	1.6
Rhythm	6.2	9.5	4.3
Story	2.9	6.8	3.9
Snack Lesson	.3	1.3	9.0
Total T.C.	23.3	26.6	23.6
Snack	8.1	5.6	2.2
Routine	23.5	17.2	16.9
Total	31.6	22.8	19.1
Miscellaneous	4.8	.4	3.5
Enrolled	0	.8	1.8

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use of the Snack Time for a lesson. The over-all time devoted to the snack including the "Snack Lesson" ranged from ten (School D) to sixteen minutes (School A).

The time devoted to Routines ranged from a low of 29 minutes (School C) to a high of 52 minutes (School E) per observation day. The presence of toilet facilities in the classroom apparently accounted for the large and significant differences, since in the old schools a group trip to the toilet could account for as much as 20 minutes.

These findings strikingly reveal the difficulty in attempting to translate teaching principles into practice. It would appear that much more rigid supervision would be needed to "enforce" systematization of curriculum among classes. The nursery school teachers apparently reacted to many subtle, perhaps intuitive, cues in selecting daily activities which took precedence over the scheduled lessons. It should be pointed out, however, that failure to meet the demands for a standard curriculum does not have any implications for pupil achievement. The program's emphasis upon group lessons was based upon theoretical issues rather than empirical evidence that this approach is the most effective method of teaching four year olds.

The Play Period

The Time Distribution Record had revealed that the single largest block of time during the school day was devoted to the supervised work and play period (indoors). The participating nursery school teachers had indicated that it was this period which they believed to be the most important in contributing to the social and intellectual development of

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the preschool age child. During this period the teacher and assistant teacher could work with children individually or in small groups and deal with the unique needs of each child. Presumably, the competent teacher can seize upon natural opportunities as they arise to stimulate the child's interests and enhance his knowledge. Tutorial and remedial services can be provided for children who have demonstrated deficits during group activities when individual attention could not be given.

During the play period the children are exposed to or instructed in the use of play materials and equipment which had been selected with the explicit objective of contributing to the development of specific knowledge or desirable attitudes toward academic skills (Feldmann, Shirley, 1980). Thus, the arrangement of the various play and work areas in the classroom and the placement of the toys and materials were guided by principles directed at creating a general sense of orderliness and at demonstrating cognitive relationships among the objects (blocks, animals, etc.). The rooms had been differentiated into several functional geographic areas. Each area was named and clearly identified by a grouping of common objects (book corner), similar functions (block play area), and in some cases by physical boundaries (doll corner). The distinct areas were intended to permit efficient storage and location of material and minimize children's interference with one another's activities. This ordering of the physical setting might also provide a balance for the lack of organization which presumably characterized the frequently crowded and cluttered homes of economically deprived children.

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It was anticipated that as the school year progressed there would be a change in the use of the various classroom areas. For example, as children were exposed to and became familiar with books, the use of books and the book corner would increase. Corresponding changes in preferences for the educational materials in accord with the program objectives (use of blocks, alphabet boards, listening to taped stories, etc.) and an increase in the constructiveness of play were anticipated. In the general acclimatization to the school atmosphere, hyperactive behavior would be expected to diminish along with other negative behavior characteristics such as social isolation.

The systematic description of the play period necessitated the construction of two scales, one which would focus on the behavior of the children and the other on the role and functions of the teacher and assistant teacher. In order to describe the children's behavior, the variables selected for study included the children's use of the physical environment in terms of their location in the room, the material they were using (either through choice or assignment by the teacher), the level of motor activity and their social contacts (other children or the teacher).

Although constructiveness of play activity was considered an important variable for study, it was not possible to obtain a direct and reliable estimate of such behavior. Constructiveness of play called for an inference on the part of the rater based upon an interpretation of the objectively observable events. Adequate interrater agreement could not be attained. The problems involved in such inferential ratings can

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readily be seen in the following incident: Two boys were observed grasping brooms at their lower ends and waving the upward pointed handles from side to side. The initial impression of inappropriate use of materials was dissipated when sometime later the observers noted that the broom sticks were being used as fire hoses to douse some imagined conflagration. What appeared at first to be inappropriate behavior was actually fairly high level dramatic play.

The rating of intensity of motoric activity did provide an indirect and partial measure of constructiveness in that violent activity was typically associated with undesirable or destructive behavior. However, the converse (no or minimal motor activity) did not imply constructive play.

Location Activity Material Inventory (LAMI)[1]

The Location Activity Material Inventory was designed to provide an objective description of child behavior during the Play Period. The dimensions selected for study included:

(a) the S's geographic location in the classroom,

(b) the equipment he was using,

(c) his social contacts, and

(d) the type and intensity of his motor activity.

With the exception of the rating of motor activity which is determined by the degree of activity, the LAMI is essentially a nominal scale. The dimensions are simply and precisely defined in terms of directly observable events so that inferences required of the rater are kept to a minimum.

[1] The format of the LAMI is an adaptation of a scale developed at VA Hospital Montrose, N.Y. (See Hunter, Schooler, and Spohn, 1962.)

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A. Location. The presence of the subject in one of the seven geographical areas at the time of the observation constituted his location response. The locations corresponded with the distinct areas designated by the educational staff. They were either separated structurally (e.g., the screened off doll corner area) or functionally (e.g., the block area, which was adjacent to the block storage shelves and thus lent itself to block building; the tables which were placed near those materials used on tables).

The locations had been assigned the following numbers for recording the area. (A diagrammatic picture of one of the rooms is presented in Figure 1.)

(1) book corner and manipulative toy shelves

(2) table area

(3) paint area (easel and sink)

(4) doll corner (kitchen area)

(5) transportation toys, block shelves and adjacent floor area

(6) manipulative toy shelves and adjacent floor area

(7) open corner area

Figure 1

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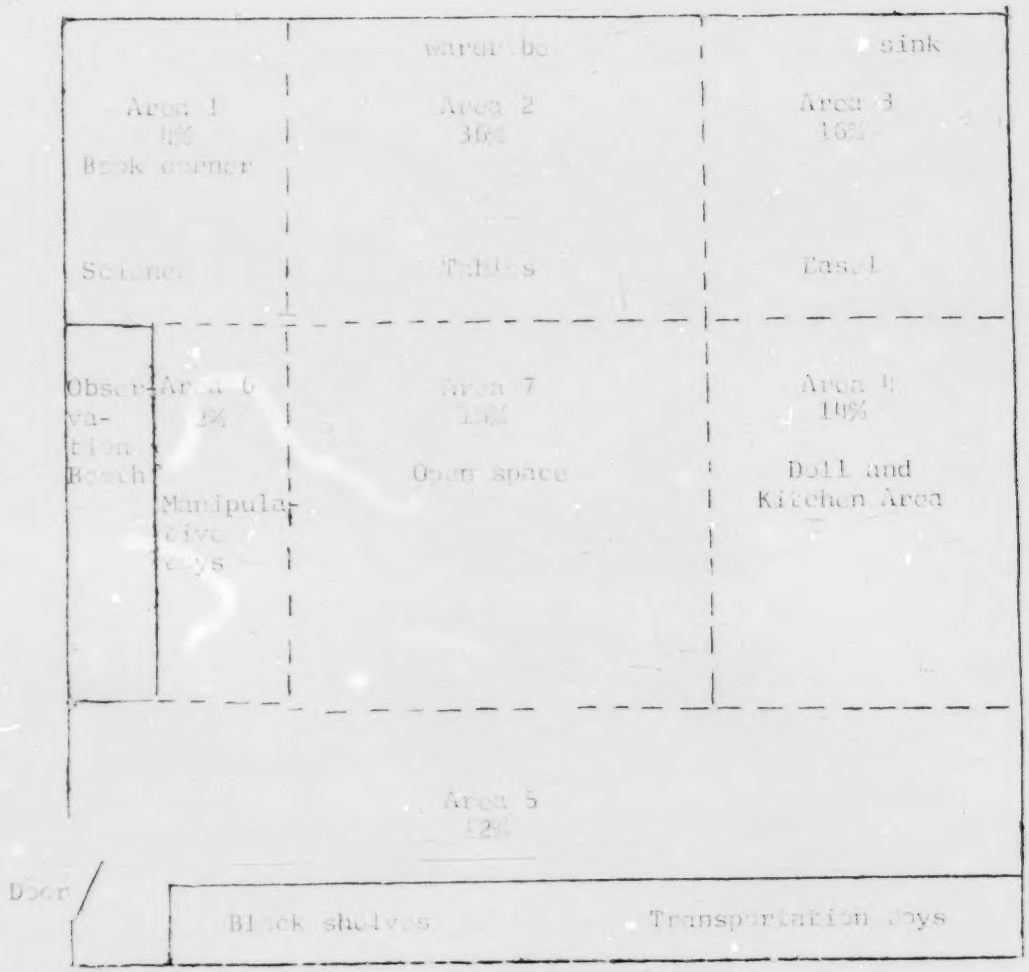
Schematic representation of work and play areas in preschool classes (not drawn to scale)



Note: Average percentage of children observed in each area for all classrooms indicated in parentheses.

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B. Material. The type of toy or piece of equipment the child is using constituted the material response. The simultaneous use of more than one piece of equipment was also recorded. The criterion for noting use of an object was direct observation (staring at) or physical contact with that object. The following types of materials and their designated symbols for recording were differentiated:

(BO) books

(MT) manipulative toys, such as puzzles and pegboards

(A) art toys, including painting equipment, clay, casting material, scissors, paper, etc.

(HH) household and kitchen toys, including artificial fruits, plants, cups, play furniture, clothing, and the doll carriage

(TA) tape recorder

(W) water

(TR) transportation toys, including trucks, wagons, airplanes and cars

(DO) dolls

(TL) telephone

(F) plastic human and animal figures

(BL) blocks

(SC) science toys, such as lenses, turtles, plants, kaleidoscope

(MU) musical instruments

(RE) room and maintenance equipment, such as brooms, rugs, spoons, chairs, tables, sink, etc. (no toys)

(CL) clothing and jewelry

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(AB) alphabet board

(S) sand

(X) miscellaneous

(O) no material

C. Interaction. If a child, at the time of observation, engaged in talking or listening to another child or the teacher, or if he was in physical contact with or sharing a toy with another person, he was classified as in social interaction with that person. One or two of the following three types of interaction were recorded for each observation:

(T) teacher

(C) child (or children)

(O) no social interaction

D. Activity Level. The amount of movement exhibited by a child was indicated by one of the following five descriptions:

(1) no overt movement (lying, sitting, standing)

(2M) movement involving a moderate expenditure of energy without changing location in the room (writing, talking, painting, block building)

(2L) locomotion involving a moderate expenditure of energy (walking, crawling)

(3M) movement involving a high expenditure of energy (swinging arm, kicking, aggressive acts, pulling another child's arm, punching another child, etc.)

(3L) locomotion involving a high expenditure of energy (running, jumping, dancing, hopping, climbing on table, aggressive acts, etc.)

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The Rating Procedure

The LAMI was used by a single observer at predetermined intervals. The observer focused on each subject in the sequences in which the names were presented on the data sheets.[1] (A sample data sheet is presented in Appendix B.) The behavior of each subject was categorized and recorded. Each subject was observed in a form resembling a snapshot. If the observation lasted several seconds, this time served to clarify what the subject was doing at the first instant of observation. The observation and recording for one subject took up to 15 seconds so that the total time required for one complete observation would rarely exceed four minutes (assuming an average attendance of 15 children) and was frequently completed in approximately two minutes. Each subject in the room at the time of the observation was rated once. Five or more observations during each play period were usually obtained.

Observations were carried out during the 1963-64 school year at four prekindergarten (four year olds) classes in Harlem. Observers attended classes at weekly intervals, rotating days of the week, thus obtaining ratings on approximately 20 percent of the school days (a total of 95 observation days of 481 actual preschool days for the four classes). The number of observation days at each school varied somewhat due to a two week delay in starting classes at one school and occasional

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1. An alternative method in which the observer scanned the room systematically by means of areas and rated each child in that area resulted in some confusion because of the movement of children during the observation period.

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observer illnesses. From 21 to 26 observation days were obtained at each school and from three to eight LAMI ratings were made each observation day on a total of 53 children (28 girls and 25 boys). Only children who attended classes at least 2/3 rds of the school days were included in the ratings. The number of ratings for each child ranged from 80 to 174 with a median of 120 ratings per child. The children were drawn from a non-white, lower class population characterized by family incomes of less than $4,000 per year.

Interrater Reliability

During the initial observation periods, observers undertook ratings of classroom behavior in pairs in order to permit measurement of interrater agreement. For the LAMI it was necessary to identify each child by name in order to make the observation and the rating. The observer assigned to the particular class pointed out the child to the second observer generally identifying the child by the color of his clothing. Then both raters independently recorded their ratings of the four LAMI variables and then the next child listed on the data sheet was identified and rated. A total of 12 pairs of LAMI ratings was obtained. The data from these observations were pooled yielding 169 pairs of observations. Each child attending the preschool classes was observed and rated two or three times during the reliability check.

For a set of essentially nominal scales such as the LAMI in which the categories are independent and not ordered,[2] Cohen's coefficient of agreement for nominal scales (kappa) can provide an estimate of reliability. (Cohen, 1960).

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2. Although the Activity scale is partially ordered, the same coefficient of agreement was used. The extreme activity category was rarely observed so that the categories of _overt movement_, _moderate locomotion_, and _moderate movement_ accounted for more than 95% of the ratings.

Kappa was computed for each variable separately. The numerical value of kappa is directly interpretable as the proportion of joint judgments in which there is agreement after the proportion of chance agreement is excluded. The percentages of total agreement, the percentage due to chance, kappa, and the standard error of kappa for each of the four LAMI subscales is presented in Table 8.

TABLE 8

Percentages and Coefficients of Agreement (kappa) and Standard Errors For the LAMI Subscales

	% Agreement	% Attributable To Chance	Kappa	SE Kappa
Location	96%	27%	.95	.047
Activity	92%	46%	.86	.070
Material	87%	11%	.86	.024
Interaction	92%	60%	.77	.102

Results

Location: The frequency (percentage of use) of the various locations are indicated in Figure 1. The table area (No. 2) in which children engaged in art activities and manipulative toy (puzzle) play was the most frequently used area. More than 1/3 of the children were observed in the table area during the play period. The easel and sink area was the next most frequently populated area with the "natural" activities (art and water play) associated with this location.

Children with transportation toys, blocks, or children without any material were observed 75% of the time in the open central area (No. 7).

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The doll and kitchen area was used 14% of the time with household toys receiving most use.

The block shelf area received an overall rating of approximately 12%. The popularity of this area was directly related to the use of blocks which increased from the beginning to the end of the year. During the first quarter of the year, 8.6% of the children were observed in this area; in the last quarter 14.3% of the children were using the area.

The book corner (No. 1) and the shelf area (No. 6) were infrequently used. The tape recorder with a taped story read by the teacher on it, the alphabet board, and books located in Area 1 were rarely used by the children. Area 6 was considerably smaller in size than the other areas and was used for block play. In subsequent observations, Area 6 was combined with the open area (No. 7). In general, the material and equipment were used by the children in the areas intended for their use.

The frequency of use of various areas did appear to vary with the physical characteristics of the classrooms. In rooms where there were more tables, as in the newer schools, the table areas were utilized more frequently (41% of the play period) than in the older schools (29%) where there were fewer tables. In the older classrooms, the open areas absorbed the overflow. Children were observed in the open areas 21% of the play period time in old buildings and only 10% of the time in the newer buildings. There was also an indication that teacher preferences for activities affected the choice of play areas for the children.

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Materials

The frequency of use of each category of the various materials was determined by simple count of the number of times children were observed with the specific material in relation to the total number of observations. Frequency of choice in percentage of total observations for the ten most frequently used categories of materials are presented in Table 5 for each school and for the total year.[2]

The rank order of preferences among the four classes were strikingly similar. Intercorrelations (Spearman rho) ranged from a low of .75 to a high of .93 among the four classes. There were some differences, however, among the four classes in regard to the popularity of specific materials (art, manipulative toys, household toys). In part this reflected teacher preferences for various types of toys or equipment. The observers noted that the teacher played a major role in determining the selection of materials by the children. For example, as part of the language development curriculum, teachers were instructed to discuss choice of play period materials with the children prior to the start of the period. While this technique encouraged children to use language to plan ahead, it also permitted the teacher to guide the selection of materials. Teachers also occasionally removed some toys. For example, Teacher D removed many large transportation toys (trucks) because their use led to excessive noise and motor activity.

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[2] Preference for toys reported in prior studies (McDowell, 1937; Van Alstyne, 1932) showed block, art, and some transportation toys to rank among the most frequently chosen. Puzzles (manipulative toys) were relatively unpopular. Inferences concerning change in preferences between the pre-schools of the '30's and the current population cannot be drawn since the amounts of available toys in each category are not known.

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TABLE 5

Children's use of materials in percentage of times observed with each material category during play period in each class

School	A	B	C	D	Total
No. of children	10	16	11	16	53
No. of days observed	23	21	25	26	95
No. of pacings completed	159	122	152	183	616
Materials					
Art	16%	16%	18%	21%	18%
Manipulative	9	17	12	16	14
None	16	9	13	11	12
Household	10	14	17	7	12
Blocks	12	9	11	8	10
Water	3	10	5	6	7
Transport	10	6	6	5	6
Room Equipment	3	4	4	3	4
Clothing	5	3	2	6	4
Dolls	6	3	3	3	3
Other*	13	9	10	10	11

* Other includes Sand 2% (total), Tape Recorder 2%, Science Material 2%, Musical Instruments 1%, Alphabet Board 1%, and Books 1%

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One deficiency in the execution of the program objectives was apparent in the observations of use of materials. The educational material received little use. These included books, taped stories (tape recorder) and the specially constructed "alphabet board." These materials were used no more than 2% of the time by the children. Observers noted that on days when teachers demonstrated materials such as the alphabet board or tape recorder, children spontaneously selected them for play. To encourage use of these "toys" teachers probably could sustain interest in them by repeated demonstration prior to the play period.

Some changes in material usage over time were noted (See Table 6). Changes from first half of the year to the second half may reflect changing interests of the children and of the teachers. At the start of the school year, it was apparent that the children did not play with blocks possibly because of lack of familiarity. The teachers intervened and demonstrated the manner in which blocks could be used. The frequency of use increased somewhat (from 8% to 12%) in the second half of the year. The small change in apparent popularity of transportation toys over time was largely a consequence of a teacher who did not make the trucks available to the children during the latter half of the year. The popularity of manipulative toys (puzzles, color cones, etc.) also diminished with time. Mastery of such toys lead to loss of interest.

TABLE 6

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Children's use of material in percentage of times observed with each material category during play period for First (Nov.-Feb.) and Second (Mar.-June) half of school year for all classes

	First Half	Second Half
No of ratings completed*	257	359
No of days observed	47	48
Materials		
Art	17%	19%
Manipulative	15	13
None	12	12
Household	12	11
Blocks	8	12
Water	6	7
Transport	8	5
Room Equipment	3	4
Clothing	4	3
Dolls	4	2
Other	10	12

* The increase in number of ratings in the second half of the year was a result of experience in carrying out the ratings.

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There were, as expected, fairly obvious sex differences. (See Table 7). Girls were observed more frequently with household equipment, water (used with kitchen toys), and dolls. Boys were observed more frequently with blocks and transportation toys. There was a tendency for girls to make use of art materials (drawing, painting, construction, clay, etc.) to a slightly greater extent than boys. With regard to other types of material, sex differences were minimal.

TABLE 7

Sex difference in use of materials in percentage of times observed with each material category.

	Boys N = 25	Girls N = 28
Materials		
Art	16%	20%
Manipulative	14	14
None	13	11
Household	8	15
Blocks	15	6
Water	4	9
Transport	12	1
Room Equipment	3	9
Clothing	4	3
Dolls	1	6
Other	10	12

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Social Interaction

Among the goals of nursery school education is the "socialization" of the young child. The term includes such social behavior as learning to play cooperatively and to share with other children. The objectives of the enrichment program go somewhat beyond this level of socialization and seek to develop means of utilizing social interaction in the interest of cognitive development. For the classes in this study, the enhancement of cognitive skills were dependent largely upon teacher-child interaction. (Within the kindergarten program, word, arithmetic, and concept formation games have been developed for small groups of children to work at without continuous teacher supervision.)

The recording of social-interaction at this stage of program development is intended to provide base line descriptive information. The following questions were raised:

(1) What percentage of the time are children observed alone, interacting with other children, with the teacher, or assistant teacher, or with other children and the teacher in a small group?

(2) What were the characteristics of the children with whom the teachers tend to interact?

(3) Did the teachers spend time with the more isolated children presumably in an attempt to modify the behavior of such children?

(4) Did the teachers spend more time with the less bright children who presumably required more tutorial attention than the brighter children?

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The percentages of time children were observed alone or in interaction with other children or the teachers for each class for the first and second halves of the year are presented in Table 8.

TABLE 8

SOCIAL INTERACTION:

PERCENTAGE OF OBSERVATIONS IN WHICH CHILD WAS ALONE, WITH OTHER CHILDREN, OR WITH TEACHERS IN EACH OF THE 4 CLASSES FOR FIRST AND SECOND HALF OF YEAR

SCHOOL	SEMESTER	CHILD ALONE	CHILD WITH CHILDREN	CHILD WITH TEACHER [a]
A	1st	74	15	11
	2nd	72	17	11
B	1st	76	16	9
	2nd	75	16	9
C	1st	47	35	18
	2nd	38	42	20
D	1st	72	15	13
	2nd	69	18	12
TOTAL MEAN		66	21	13

[a] When the specific child under observation was with a teacher and other children, he was classified in the "with teacher" category. Four percent of Class C observations were in this category. This occurred less than 1% of the time in the other classes.

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The influence of the teacher on social interaction is strikingly evident in the difference between Class C and the other three classes. In the latter classes, children were observed to be alone during the play period in 73% of the observations, in contrast to 42% in Class C. The teachers in Class C spent almost twice as much time interacting with the children (20%) as did the other teachers (11%). Their readiness to interact with children may have stimulated the higher child-child interaction rate observed in Class C (38%) in comparison with the others (16%).

A small but consistent change towards increased social interaction from the first half to the second half of the year was evident in every class. Despite the initially high rate of interaction in Class C, this class displayed the greatest increase over time. The relative position of the children in regard to social interaction over time was moderately stable. A Pearson product-moment correlation between the percentages of social isolation for the first half and second half of the year was calculated and yielded an r of .39 (SE_r= .14).

In examining the characteristics of the children with whom the teachers tend to interact, there were several tentative findings worthy of further investigation in later samples. Firstly, there was a tendency noted for teachers to be observed interacting to a greater extent with boys than with girls. Sixty-eight percent of the boys were high interactors with the teacher (above class median) whereas only 36% of the girls were above the median in this category.

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($P < .05$.) The fact that girls were more likely to be located in the closed-off doll corner may have limited the chance contacts with the teachers during the play period.

Spearman Rank difference correlations were calculated between pretest IQ rank within each class and the teacher-interaction rank within each class. Rhos of .63, .15, .50, and .52 were obtained for Classes A, B, C, and D respectively. In three of the four classes, it appeared that the teacher spent more time with the brighter children. This finding raises questions concerning the strongly emphasized remedial and tutorial aspects of the play period. If bright children are more likely to be found with the teacher, are the children who do not interact, particularly the isolates, more likely to be dull? Rhos between isolation and IQ of -.55, -.28, -.19, and -.40 for Classes A, B, C, and D were obtained. The correlations are in the direction which suggest that isolates may have lower IQs. Only two of these correlations, however, approach significance.

Motor Activity

The level of activity during the play period reflects in part the extent to which the children have adapted to the requirements of the school situation. Extremes in the degree of motor activity were assumed to be detrimental to learning. Hyper-activity and aggressive behavior tend to interfere with attention and to disrupt task oriented behavior in other children. Undesirable effects of minimal motor activity in preschool children are less obvious; unusual degrees of inactivity may reflect a depressed motivational state or a reaction to rigid controls or restrictions imposed by the teacher.

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The purpose of the observations initially was to provide descriptive data. Sex differences in activity level were, of course, expected. It was also anticipated that the extreme degrees of motor activity (over and under activity) would diminish as children gained experience in school and learned the role of a pupil. The investigation of the relationship between activity level and the amount of learning or achievement could not be undertaken at this stage since measures of achievement were not available.

For each child the percentages of times he was observed in an activity category was calculated and mean percentages for all children obtained. The activity levels for the first and second halves of the year are presented in Table 9.

TABLE 9

Activity Levels in Mean Percentage of all observations for 1st and 2nd Semesters, Standard Errors and P level of differences between means of 1st and 2nd Halves of year

Level of Activity Observed	1st Half Mean	S	2nd Half Mean	S	P
None	7.3%	5.31	5.0%	4.76	.01
Moderate stationary	72.9	12.41	78.8	10.98	.01
Moderate locomotion	15.8	7.99	13.9	6.98	.1
Intense	1.8	1.71	2.8	1.80	.01

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The change in level of activity over time was in the direction anticipated. Extreme levels of activity diminished, whereas moderate stationary activity increased significantly. Activity level, however, was a fairly stable characteristic in that children maintained similar patterns throughout the year. The correlations between activity for the first and second halves of the year ranged from 0.49 for moderate locomotion to 0.85 for no activity (SE_r = 0.14). The first half-second half correlations for moderate stationary and for intense activity were 0.66 for both.

The anticipated differences in activity level between boys and girls were confirmed. Boys were observed to move around more than girls and to engage in more intense or aggressive behavior during the play period. The mean percentage at each activity level for boys and girls are presented in Table 10. Boys also tended to be more variable than girls in the percentage of times they were observed in moderate locomotion and in intense activity (F ratios significant at beyond the 5% level).

TABLE 10

Activity levels (mean percentages) for boys and girls, standard errors, and P level of differences between means

Level of Activity Observed	Boys (N=25)		Girls (N=28)		
	Mean	S	Mean	S	P
None	5.8%	3.88	6.4%	5.01	N.S.
Moderate Stationary	69.5	10.97	80.8	9.38	.01
Moderate Locomotion	17.4	6.90	11.8	4.80	.01
Intense	5.5	4.77	1.1	1.23	.01

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The activity levels for the four different preschool classes are presented in Table II. Inspection of the activity patterns revealed a striking departure for Class C from the patterns of the other classes. Class C had the smallest amount of observed moderate stationary activity with correspondingly greater amounts at the other activity levels. There was no obvious explanation which might account for this difference. The teacher in this class apparently maintained control by means of a subdued voice and manner. The noise level in this room seems considerably below that of the other classes. Particularly during story and circle time, there were few instances of disruptive behavior.

TABLE II

ACTIVITY LEVEL - MEAN PERCENTAGES FOR THE FOUR CLASSES

SCHOOL	A	B	C	D	TOTAL
N	10	16	11	16	53
ACTIVITY OBSERVED					
None	6%	0%	10%	5%	6%
Stationary Moderate	79	91	62	80	76
Locomotion Moderate	11	5	20	14	14
Intense	4	2	7	1	3

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Another suggested difference appeared to be related to the physical characteristics of the classroom. The number of aggressive and intense activity incidents were more frequent in the older, smaller classrooms (A & C) than in the larger classrooms in the new buildings. The comparison of high and low activity subjects by physical characteristics of the classroom is presented in Table 12 for boys and for girls. It should be noted that the other confounding variables (number of children and teacher styles) do not permit any definitive conclusions at this time.[1]

TABLE 12

PHYSICAL CHARACTERISTICS OF ROOM AND INTENSE MOTOR ACTIVITY (INCLUDING AGGRESSIVE BEHAVIOR) [a]

	BOYS (N=25)		GIRLS (N=28)	
	Activity Level		Activity Level	
	High	Low	High	Low
Small Room Old Building	9	2	8	2
Large Room New Building	6	10	5	10
χ^2	7.48		3.32	
P-Level	.01		.10	

[a] High and Low activity for boys was based on a median split. Boys observed in intense activity more than 3.5% of observations were rated "High"; 3.5% or less were "Low." Girls were divided into those showing no intense motor activity (Low) versus those showing some (High).

[1] In regard to teacher style teachers in Classes C and D were reported to be highly controlling, whereas teachers A and B appeared to be relatively permissive. It was teacher D who removed transportation toys which contributed to excessive noise and activity

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Relationships between activity and intellectual ability and social interaction were examined and found to be at chance levels.

Teacher Play Period Rating (TPPR)

The TPPR was designed to describe teacher activity during the Indoor Play Period. In this respect it complements the LAMI which focussed on the pupil. Since nursery school teachers stressed the importance of the individual tutorial teaching that takes place during the play period, this rating scale classified the activities of the teacher into the broad category of time spent interacting with children (further subdivided into 7 categories) and time spent with adults or engaged in other activities during the play period (4 subcategories).

Initially, the unit of measurement undertaken was the time the teacher devoted to various activities. (It was later changed to a count of discrete acts at 15 second intervals.) The teacher was observed for a five-minute period, and a continuous recording of her behavior was made using shorthand symbols, a technique similar to Bales Interaction Process recording (1951). Attempts were made to differentiate between teacher initiated activities and child initiated activities (the identification of the initiator of the interaction had to be abandoned.) In the interaction with the child a further classification was made according to the type of interaction between teacher and child. The content of the teacher-child interactions were classified into categories as follows:

1. Informal Teaching--any activity in which the teacher imparted knowledge to the child, such incidents as writing the child's name on

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paper while repeating the letters aloud; asking the child to repeat letters; showing a child how to fit a puzzle together; etc.

2. Auxiliary Help--Assisting child with clothing or difficult motor coordination tasks (cutting or fastening construction paper) or physical activities beyond the child's ability. If the teacher instructs the child to attempt the act by himself, it is classified as Informal Teaching.

3. Control Behavior--Stopping a child's activity as a disciplinary measure or because of time. Both verbal and physical behavior are included in this category.

4. Direction of child to an activity--It may follow controlling behavior or it may be the consequence of the child's request. (Example: "John, it's your turn to paint at the easel now")

5. Social Contact--This type of interaction includes comments such as greetings, comments regarding the child's appearance, or his behavior.

6. Role-playing--This includes involvement in play activity frequently on a fantasy level with the child.

7. Non-decodable--Inaudible or non-classifiable activity.

The time the teacher spent in activities which did not entail interaction with children was recorded and classified into the following categories:

a. Teacher-assistant teacher interaction- discussions between teacher and assistant teacher, planning lessons, etc.

b. Teacher-other adult interaction- conversation with visitors, parents, supervisors, and the observer.

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c. Teacher engaged in other activities - clean-up of room or materials (not directly involved with children), preparing materials, washing, etc.

d. Teacher observing- looking around room or at children without interaction.

Rating Procedure

Initial attempts at continuous recording proved too complicated with consequent low inter-rater reliability. The observations during the first half of the year, however, were based upon this system of rating behavior. For the second half of the year the procedure was changed to "instantaneous" time samples at 15 second intervals (similar to the LAMI). The observer was instructed to look at the teacher at 15 second intervals, determine what she was doing at that instant, observing for sufficient time only to identify the activity in which she was engaged. Once the activity could be classified, the observer recorded it, waited until 15 seconds had elapsed from the beginning of the observation, then the observer again noted what the teacher was doing at that instant, and recorded the behavior, etc. In this manner, 20 discrete ratings were obtained during a five minute interval. Occasional double scoring was necessary. These were times for example, when the teacher was interacting with the assistant teacher and with a child simultaneously. A sample record sheet is presented in Appendix C.

Reliability

In order to obtain an estimate of inter-rater reliability, Cohen's coefficient of agreement for nominal scales (kappa) was

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TABLE 13

Percentage of Time Devoted to Activities During Play Period for the Five Teachers (First Half of 1964-65)

SCHOOL	A	B	C	D	E
No. of Observations	25	18	20	15	18
Activity	%	%	%	%	%
Inf. Teaching	10.2	18.5	20.4	19.6	15.2
Aux. Help	22.8	10.4	8.4	10.8	9.1
Control	3.3	3.4	6.8	3.4	7.8
Directs	11.9	7.5	16.2	10.0	11.9
Social	27.1	16.6	14.9	19.6	21.9
Role-Play	.6	4.8	1.1	11.8	4.0
Non Decode	2.9	5.6	4.7	7.2	5.4
Total	82.3	66.8	72.5	82.4	75.3
Teacher-Teacher	2.6	9.7	2.6	0.4	1.1
Other Adult	.3	2.2	.6	.4	.2
Activity	5.7	13.0	10.8	11.1	12.5
Observes	8.6	8.6	13.3	1.8	10.7
Total	17.7	33.5	27.3	17.7	24.5

employed. The data from ten pairs of observations (two pairs of the discrete type of ratings per teacher) were employed to determine reliability. Analysis of the data yielded a kappa of .74 which is directly interpretable as the proportion of joint judgments in which there is agreement after chance agreement is excluded. The standard error of kappa for this sample was .03, indicating adequate interrater agreement.

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TABLE 14

Percentage of Time Devoted to Activities During Play Period
For the Five Assistant Teachers
(First Half of 1964-65)

SCHOOL	A	B	C	D	E
No. of Observations	6	8	7	6	7
Activity	%	%	%	%	%
Inf. Teaching	6.4	4.8	7.9	37.3	6.9
Aux. Help	23.1	3.4	19.9	10.6	12.8
Control	6.4	1.8	11.6	1.1	11.3
Directs	11.4	4.4	4.2	12.7	8.2
Social	20.6	14.5	10.5	10.2	11.4
Role Play	.0	3.7	1.4	4.0	1.1
Non Decode	6.3	7.6	7.1	23.4	8.7
Total	74.0	40.2	62.6	83.3	60.4
Teacher-Teacher	3.5	13.2	1.2	2.2	.3
Other Adult	.6	.3	1.2	0	.7
Activity	12.8	24.6	25.7	4.5	26.5
Observes	9.3	21.7	9.4	9.5	12.0
Total	26.2	59.8	37.5	16.2	39.5

Results

During the first half of the year, the median total time teachers were observed to be with children was 75% with a range among teachers from 66.8% (Class B) to 82.4% (Class D). (Tables 13 thru 16 summarize the findings for the first and second halves of the year for teachers and assistant teachers separately.)

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TABLE 15

Percentage of Time Devoted to Activities During Play Period
For the Three Teachers
(Second Half of 1964-65)

SCHOOL	A	B	C
No. of Observations	15	16	17
Activity	%	%	%
Inf. Teaching	21.2	24.9	12.8
Aux. Help	15.2	11.6	23.9
Control	3.3	5.1	3.8
Directs	7.5	5.7	11.8
Social	17.2	13.3	15.2
Role Play	.3	3.4	.2
Non Decode	4.3	.6	7.8
Total	69.0	64.6	75.5
Teacher-Teacher	.7	9.3	1.7
Other Adult	3.5	5.7	2.1
Activity	11.5	15.3	10.7
Observes	15.3	5.1	10.0
Total	31.0	35.4	24.5

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TABLE 16

Percentage of Time Devoted to Activities During Play Period for the Three Assistant Teachers (Second Half of 1965-65)

SCHOOL	A*	B	C
No. of Observations	10.	7.	8.
Activity	%	%	%
Inf. Teaching	27.0	9.2	18.3
Aux. Help	9.5	7.4	12.9
Control	3.0	4.9	1.1
Directs	7.8	9.2	3.8
Social	23.5	16.0	10.2
Role Play	7.0	1.2	.0
Non Decode	3.5	1.8	10.8
Total	81.3	49.6	57.1
Teacher-Teacher	.5	8.6	2.2
Other Adult	.0	3.7	7.0
Activity	4.8	15.4	27.4
Observes	13.5	22.2	6.4
Total	18.8	49.9	43.0

* Assistant teacher different from first half.

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It was evident that teachers did spend a major portion of their time engaged in activity with children. Differences among Schools, however, did exist. An analysis of variance (Table 17) for time spent in non-child interaction revealed most teachers in School A spent significancly more time (75%) with children (less non-child interaction) than did other teachers (66% and 57%). There was also a significant interaction effect in that it was particularly the assistant teacher at School A who spent more time interacting with children (81%) than did the three regular teachers (70%) and the other two assistant teachers (54%). (See Tables 15 and 16 for mean percentage of time spent with children by teachers and assistant teachers).

It should be noted that the TPPR findings tended to be consistent with the LAMI findings which were obtained in the previous year. Social interaction was highest in this same school (See Class C, Table 8.).

TABLE 17

Analysis of Variance for time spent in non-child interaction (TPPR) For Teachers and Assistant Teachers for Second half of year

Source of Variance	Sum Squares	df	Mean Square	F	P
Schools	248.17	2	124.08	7.99	.01
Teacher vs Assistant Teacher	51.90	1	51.90	3.34	N.S.
Schools X Teachers	145.66	2	72.83	4.69	.05
Error	1056.00	68	15.53		

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The amount of behavior identifiable as teaching that takes place during these teacher-child interactions, however, tended to be small. At School A the teachers devoted a large percentage of their time (23%) to providing auxiliary help for children (See Tables 13 and 14). Much of the play period activity was devoted to art projects in which they assisted children with relatively complex construction tasks.

There also appeared to be differences among the other categories for teachers. Interpretation of such differences were precluded because of the limited reliability of the first half year measures. The role of the assistant teacher was planned to be identical with that of the senior teacher during the play period. It appeared that this did not occur during the first half of the year. Assistant teachers spent considerably more time engaged in activities that do not entail interaction with children than do teachers in four of the five classes. The median time with children for assistant teachers was 62.6% with a range of from 40.2% to 83.3%. Class D was the exception where the assistant teacher and the senior teacher played very similar roles. (In this class the assistant teacher's soft spoken manner contributed to the large percentage (23%) of non decodable behavior.)

Although examination of individual patterns may yield information concerning teaching styles, the outstanding finding at this stage of analysis was the relatively small proportion of the teacher's time devoted to informal teaching despite the emphasis on opportunity for tutorial contacts during this period.

The Group Lesson

The approach to the description and evaluation of teacher-pupil behavior during the teacher-centered activities paralleled the procedures employed for the observations of the play period. Two scales were devised, one to describe several aspects of the teacher's behavior and one the child's attentiveness. The latter scale is still in a preliminary phase of development.

Dimensions that were selected for study, in addition to being considered important in the mediation of classroom behavior, had to be capable of objective definition. In his review of attempts to evaluate teacher competence and effectiveness, Barr (1961) stressed the serious limitations of previous studies which appeared to be a consequence of the diffuse and highly subjective nature of many of the behavior rating scales used. The low inter-rater agreement probably accounted for the reported difficulties in replication of studies and some of the contradictory and inconclusive findings.

Scales devised by Medley (1962) for use with higher grades do minimize subjective judgments. Teacher-pupil behavior at the upper elementary grades appears to differ in kind and complexity from the prekindergarten level. His work did provide guidelines and the similarity of dimensions employed in the present study to four of the variables Medley described will be evident.

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Teacher Observation Scale (TOS)[3]

The TOS measures four dimensions of teacher style which have been hypothesized as important in mediating classroom learning. It is intended to be used while the teacher conducts a group lesson or reads a story. Three dimensions of the TOS deal directly with the implementation of learning and one with the amount of disciplinary behavior. They included the following:

1. Information giving referred to any simple statement of facts, concepts, or ideas in a story transmitted by the teacher to the child.

2. Eliciting responses concerned the teacher's efforts to engage the child in learning activities through questions or instructions to respond either verbally or motorically.

3. Feedback referred to any indication by the teacher of the correctness or incorrectness of the child's performance during the lesson. In an attempt to assay the "warmth" of the teacher's personality, the feedback category was divided into a number of subcategories: (a) simple confirmation or (b) enthusiastic supportive confirmation of the correct response, and (c) simple negation of the wrong response or (d) corrective negation in which the teacher added the correct response after pointing out an error.

4. Control included all attempts on the part of the teachers to direct the child's attention back to the learning

[3] This section includes parts of papers by Bloom & Wilensky (1964) and Wilensky (1965).

activities. It included verbal statements or physical intervention by the teacher which were intended to stop disruptive or inattentive behavior in children. Provision was made for identifying which teacher (regular or assistant) undertook the disciplinary action.

The process of eliciting responses was considered to be of particular significance. Such behavior permits the direct reinforcement of responses which has been stressed as a most significant method of shaping human behavior (Skinner, 1954). For effective teaching, correct responses that have been elicited should be reinforced and incorrect responses identified through prompt feedback to the pupil.

A danger in the delay in feeding back information concerning the appropriateness of responses was vividly demonstrated in a classroom incident which dealt with color identification. The teacher held up a red disc and asked a child to name it. The first child guessed, "Blue." Without comment, the teacher proceeded to ask five other children in the circle for the name of the color and each child repeated the incorrect initial response. Before the teacher finally supplied the correct association to the stimulus, the red disc had been labelled "blue" six times!

Rating Procedure

Continuous recording and categorization of teacher-pupil behavior into the general categories were made by a single observer for five minute periods. A short rest or a different

rating procedure was interpolated between TOS ratings to provide a respite from the disciplined attention required in continuous recording of behavior. The focus was primarily on the teacher with peripheral attention given to the children. The pupils did provide contextual cues for differentiating between feedback and sarcastic control statements. Typically, one to three TOS ratings could be made during a single day. There was some variability among teachers in the duration and frequency of group lessons and stories. One teacher tended towards frequent, brief lessons so that several lessons of less than five minutes duration were observed necessitating prorating for the standard time interval. The type of lesson (story, discussion, snack lesson, formal lesson, etc.), number of children present, time begun and ended, date and teacher were noted. A stopwatch was necessary to obtain an accurate measure of the total observation period. A sample record sheet is appended (Appendix D).

The Categories

Information Giving (IG) includes all behaviors in which a fact or concept is related to the children. No evaluation of the child's behavior is included in this category. Information Giving is defined as an action initiated by the teacher (incontrast to feedback which is a reaction), of factual content (in contrast to control which is of pr eparatory content).

Examples of behavior units: "This circle is red." "Then the man became very tired." "This book is about a little boy named Johnny." "If you touch the tip of this pen you feel that it is sharp."

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Although it would have been desirable to score as a separate unit each identifiable fact, the observers could not obtain adequate inter-rater agreement under these conditions. The problem is readily manifest in the statement, "This red rubber ball is bright and bouncy." which contains five separate facts. "This is a ball." "It is red." "It is made of rubber." "It is bright." "It is bouncy." Actually, most teachers spoke in very simple sentences so that the former situation rarely occurred. In order to obtain better agreement among raters, independent clauses were scored as a single bit of information regardless of complexity.

Eliciting Responses (ER), includes primarily, but not exclusively, questions. It may consist of simply calling a child's name, the question then being implied. The teacher may also begin a sentence, nod to the child, and have him complete the sentence. Any behavior explicitly or implicitly designed to evoke a task oriented reaction from the child falls into this category.

Examples: "Now let's all stand up." "Who had his hat?" "And then he went back to...." "Yes?" "What do you think he had in his box?" "Go ahead." "Where is Johnny?" (responsive singing)

Feedback A relatively fine breakdown of the Feedback category into subclassifications appeared to be feasible. The raters had little difficulty in identifying the sub-

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categories when they occurred. However, the percentage of all Feedback responses made by the teachers was relatively small so that it was not possible to utilize the fine breakdown in the reliability study or in teacher comparisons. The finer classifications may be of value in providing some empirical basis for a qualitative rating of teacher warmth and other personality characteristics.[4]

Confirmations (FC) includes all task oriented reactions in which the teacher confirms the correctness of a response made by a child.

Examples: "Yes." "That's right." "Right." "Yes, this is blue."

Supportive Confirmation (FSC) includes all task oriented reactions in which the teacher, in addition to confirming the correctness of a response made by a child, offers a reward. She goes beyond a mere evaluation, praising a desired response or action.

Examples: "That was right!" (Note that the difference between this response and a "That's right." lies in the intonation and affective qualities of the teacher's speech and manner.) "Did you see what a nice circle Ronald made?"

[4] During the course of the observations a fifth Feedback category was discovered, the "double-bind" negation. When a child made an incorrect response, a teacher informed him: "You didn't hear me, Johnny." She repeated her question and the child again responded incorrectly. The teacher with greater emphasis stated: "Now Johnny, you are not listening!" The child apparently did know the answer but was" spared" the knowledge that he didn't know and the opportunity to learn the correct response. The teacher's misstatements about his hearing ability and attentiveness could create frustration and confusion in this child in regard to what was real in this situation.

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"That was very good!" "I like the way you said that very much." "I am really surprised how beautifully you can draw."

Negation (FN) includes all task oriented reactions in which the teacher negates the correctness of a response made by a child. Examples: "No." "No, they are not red."

Corrective Negation (FCN) includes all task oriented reactions in which the teacher, in addition to negating the correctness of a response. Examples: "No, they are not red but blue." "That's not right, it is cold."

Control (C) includes physical and verbal attempts to direct or redirect the child's attention or activity towards the task. Verbal statements are generally orders or directions, and sometimes rhetorical questions. When such action was taken by the assistant teacher it was so identified (AC). Examples: Reseating a child. Signalling silence by holding finger over lips. Holding a child back. "Wait." "Sit down." "If you all talk at one time I can't hear you." (Note that this is a factual information but it does not deal with lesson content.) "Ronald!" "Now let's all listen." "How often do I have to repeat that you sit down?" "I hope you don't believe you can go on like this."

The Units Each unit of teacher behavior is recorded as one tally in one of the seven categories. Units cannot simply be determined by such definitions as "a complete sentence," although a komplete sentence or independent clause will frequently be one unit. Occassionally a single word, short phrase or gesture may be defined by one of the observation

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categories. The attribute of being "complete" is not to be understood from a grammatical viewpoint. A unit does not have to be separated from the previous one by virtue of falling into a different category. Several consecutive units may thus fall into the same category.

To illustrate the determination of units as well as the use of categories, a brief sample from a lesson is given below. Each unit is followed by the category in which it should be checked.

T: "Yesterday I showed you a vegetable. (IG) Does remember what it was?" (ER)

C: "A tomato."

T: "No, it was not a tomato." (FN) Seats a child who was trying to crawl away. (C) "Tony, sit quiet. (C) Robert, the vegetable I brought yesterday was a ...." (ER)

C: "Green."

T: "Yes, it was green (FC) and juicy (IG) but what was the name of it?" (ER)

C: "A tomato."

T: "Betty, what was it?" (ER)

C: "A cucumber."

T: "Yes, it was a cucumber. (FC) You said that word very well; I'm really surprised. (FSC) George, sit over ..." (C)

C: "And it was round."

T: "No, it wasn't round, but long and green. (FCN) Let's all say 'Cucumber'." (ER)

All: "Cucumber."

Results

A preliminary condition to be met in the construction of

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this scale dealt with the ability of independent observers to agree on their interpretation of the behavioral categories. Based on twenty-six pairs of five minute observational periods, the inter-rater reliability coefficients exceeded .90 for each of the four observational categories. The feedback categories were collapsed into a single group and control units (A and AC) combined. The twenty-six observations were distributed among the four different pre-kindergarten classes.

The intercorrelations among the four categories were computed from percentages of the number of tallies falling into each category of the total number of units in that observation period. The pattern of relationships was consistant with theoretical expectations. (See Table 18.) There was an inverse relationship between information giving (IG) and eliciting responses (ER) which suggested that as the teacher transmitted greater quantities of information to her pupils, she was less likely to involve them as participants in learning activities, and there is correspondingly less opportunity for reinforcement through feedback. A moderate relationship between ER and F was found.

Table 18

Intercorrelations among observational categories
(26 Observations)

	ER	F	C
Information Giving (IG)	-.85	-.73	-.31
Eliciting Responses (ER)		.49	.00
Feedback (F)			-.12

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Following the preliminary reliability study, TOS observations were obtained from 16 to 19 different days in the four classes which accounted for approximately 15% of the total number of school days during the 1963-1964 school year. Observation rating times ranged from 2 hours and 45 minutes to 3 hours and 21 minutes. The average number of observations per day and the average time observed each day reflected the amount of time the teacher devoted to the more formal type of whole group teaching. (See Table 19 for these characteristics of the TOS observations.) As indicated previously, ratings were made for up to a five minute interval with approximately a two minute rest period intervening. The average duration of time the teachers were observed per day ranged from 7.7 (teacher B) to 11.2 minutes (teacher C). The average number of TOS ratings obtained per day was dependent on both the number of different lessons introduced per day and the time the teacher devoted to formal group teaching activities. The data suggested that teacher D tended to give the most frequent lessons but of the shortest duration.

Differences in the content of the formal teaching activity were most striking. Teachers B and C devoted the vast majority of their teacher-centered group activities to reading stories to the class (85% and 64% respectively). Teachers D and A devoted less of their time to stories (35% and 51% respectively).

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Table 19

Number and Duration of TOS Observations and Type of Activities

Class	No. of days observed	Average No. of Observations per day	Average length of time observed per day	Type of activity Story	vs. Lesson*
A	19	1.8	8.1'	51%	49%
B	19	1.8	7.7'	85%	15%
C	18	2.3	11.2'	64%	36%
D	16	2.3	10.6'	35%	65%

*Lesson included teacher-centered group activities such as demonstration, lecture, game, discussion, etc.

The remainder of the time was devoted to lessons and games dealing with subject matter stemming from Institute workshops directed at remedying cognitive deficiencies. Teachers D and A had an additional year of experience in the program, and it may be inferred that the prior experience in the experimental program contributed to the greater emphasis upon lessons rather than stories in the formal teacher-centered activities. Although the experimental classes were exposed to varying amounts of formal lessons, the various ability tests administered at the end of the year do not reveal differences among classes. More precise and specific measures such as achievement tests may be necessary to evaluate the effects, if any, of the type of lesson.

In regard to the teachers' styles of presentation of material, there were striking differences in sheer amount of

TABLE 20

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MEAN NUMBER OF TOS CATEGORIES PER FIVE MINUTE PERIOD

CLASS	Information Giving		Eliciting Responses		Feedback		Control		All Categori
	Mean	%	Mean	%	Mean	%	Mean	%	
A	18.5	(36%)	22.6	(43%)	5.7	(11%)	5.1	(10%)	52.0
B	36.8	(42%)	26.2	(30%)	14.0	(16%)	10.0	(12%)	87.0
C	37.4	(62%)	14.6	(24%)	5.0	(8%)	2.9	(5%)	59.8
D	34.8	(43%)	25.8	(32%)	14.4	(18%)	6.7	(8%)	81.7

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behavior units produced as well as between subcategories. (See Table 20 for the means and percentages of the various TOS categories for each class.) The differences between teachers with the higher (B,D) and the lower (A,C) total scores are statistically significant. The tempo of teacher B with the highest rate of producing the behavior units (87 per five minutes of observation) was some 61% more rapid than that of teacher A with the lowest rate of production (52 per five minutes of observation). Although the total count may include repeated content, it is apparent that some teachers will be able to cover much more material than others in the same amount of time. Whether or not the children can effectively utilize the information passed on to them is a question to be considered. The effect of teacher tempo on the cognitive abilities and achievement level remains to be examined.

Apart from the teacher's tempo or rate of producing scorable units of behavior, a repeated measures analysis of variance (using percentage scores) revealed significant differences between behavioral categories ($p < .01$).[5] Table 21 reveals that the teachers spent a major portion of their time in giving information (IG) in comparison to theoretical categories. In addition, as indicated from the

[5] To avoid the computational problems using analysis of variance with unequal N's, from 4 to 12 observational periods were randomly deleted from the data of each teacher.

category-by-teacher interaction ($p < .01$), there was variation between the teachers in how their behavior was distributed among the observational categories. Thus, of the total observable behavior of teacher C, 62 percent was categorized as information giving in comparison to 36 percent for teacher A. Furthermore, the amount of information giving complemented the response elicitation category. Teacher C who spent the largest portion of time in information giving activity tended to involve the children by means of response elicitation (24 percent) to a lesser degree than did teacher A (43 percent).

While the effectiveness of any particular style of teacher-centered activity cannot be determined from the available data, some inferences may be made from an examination of interrelationships among categories. As suggested from Skinnerian theory, it may be assumed that the ratio of feedback to response elicitation should be high for effective teaching. That is, children should be regularly and consistently informed regarding the accuracy of their responses in order to reinforce desirable behavior and extinguish incorrect response tendencies. An examination of the available data showed that this ratio does differ significantly between teachers ($p < .05$), from a mean value of .56 for teacher D to .26 for teacher A. The teacher who engaged in the largest percentage of ER behavior actually fed back the correctness or incorrectness of the children's responses less frequently.

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The type of teacher activity (story or lesson) determined to some extent the teacher style. (The group means for the TOS subcategories according to Story or Lesson is presented in table 21). When stories were read or told to children, there were more IC items (65%) than ER behavior (25%). The converse was true during discussions or lecture types of lessons (IC 35%: ER 42%). The styles of individual teachers (the relationship among the TOS categories) appeared to be consistent whether the activity was in story or other form. The teachers maintained almost identical rankings in the four categories in both stories and other lessons.

The number of control category units was intended to reflect the extent to which the children deviated from desirable classroom behavior. There were, however, striking qualitative differences noted among teachers in their use of disciplinary behavior. Class C children were typically attentive and responsive to directions and required few explicit control acts on the part of the teacher. The teacher's soft-spoken manner seemed to be one of the relevant variables. (This class, however, had a relatively high percentage of intense motor activity during the play period.) In Class A, the teacher appeared to overlook or chose not to comment on a good many disruptive actions by the children. Occasionally children left the circle to play in the clothes closet without comment from the teacher or assistant teacher. Differences in the effectiveness of controlling actions or

TABLE 21

TOS GROUP MEANS

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	Information Giving		Eliciting Responses		Feedback		Control		All Categories
	Mean	%	Mean	%	Mean	%	Mean	%	
Group Mean All Activities	31.9	(46%)	22.3	(32%)	9.8	(14%)	6.2	(9%)	70.1
Group Mean Lessons	23.5	(35%)	28.7	(42%)	10.0	(15%)	5.8	(8%)	68.8
Group Mean Stories	37.5	(53%)	17.5	(25%)	9.2	(12%)	6.5	(9%)	70.7

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statements by the teachers were also evident. These findings led to the construction of a scale to describe pupil behavior during lessons.

The sizeable and significant differences in the teaching styles of the four teachers suggest that the investigation of the relationship between various categories and pupil achievement may prove fruitful. It can also serve as an objective guide for use by supervisors in evaluating teacher effectiveness in mediating classroom learning since it brings to the attention of the observer deficiencies in type and amount of feedback and control.

Regarding the e xperimental program, the TOS did reflect the effect of previous experience in the program. The teachers who had been in the program during the prior year offered more non-story lessons and engaged in more ER types of behavior. (ER behavior is more likely to accompany lessons other than stories.) An incidental observation was the tendency for the time devoted to the more formal group lessons to decrease as the term progressed. This appeared to be related to changes in the content of the ongoing teacher seminar program. The group lesson had been stressed as an important technique in seminars and workshops during the previous year and was initially described to the new teachers. The focus of the workshops then moved on to other areas. The introduction of new techniques probably requires continual reinforcement with the teachers as well as with the children in order to prevent the extinction of such behavior.

Child Attention Rating Scale (CARS)

Attending to the teacher during the presentation of a lesson is considered an essential prerequisite to learning and the overall educational process. In preschool or kindergarten groups, learning to listen attentively is an explicit educational objective. The ability to listen attentively and to focus on the teacher should increase during the school year, and presumably pupil achievement will be related to the ability to attend during class lessons. The attentiveness of the group may also be expected to vary with the type of lesson and the teacher's style. A measure of the pupils' attentiveness may thus provide a means of evaluating specific lessons, as well as the effect of teacher styles on pupil behavior. It may also be possible to use such a measure to determine the desirable duration for group lessons.

A simple behavior checklist to be employed during group lessons (to be administered between TOS ratings)was developed to measure the child's attention. The procedure entails a rating technique essentially the same as that employed during the LAMI ratings. A child is observed instantaneously, allowing enough time to determine what type of activity he is engaged in at that moment. The observer records the behavior categories observed and then proceeds to observe the next child. Ratings are continued until all children present have been rated. The number of behavior samples obtained will depend upon the time allotted to group lessons by the teacher.

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Behavior Dimensions

The behavior to be rated consists of the visual, verbal, and motor (manipulation and locomotion) behavior of the child.

Visual entails the determination by the observer of whether the child is (+) looking at; (-) looking away from the appropriate object; or (U) unclassifiable. (Eyes closed rating depends on situation.) The appropriate object can be the teacher or the object under study (e.g., picture in book, another child, toy, etc.).

Verbal. (+) Appropriate vocalization included the absence of verbal behavior if silence is called for; or a verbal response when the teacher has called for a response. Occasionally children may mouth speech along with teacher or anticipate words. Such behavior is task- oriented and considered appropriate.

(-) Inappropriate verbal behavior most typically includes such events as talking to another child or shouting out responses when the teacher has specifically requested silence. Where a verbal response is called for and the child does not respond, the behavior is classified as inappropriate.

Motor Activity. (+) Appropriate motor activity includes following teacher's directions or the relative absence of distracting or disruptive movement.

(-) Inappropriate motor behavior includes sedentary activities such as playing with inappropriate objects, touching or poking another child, doing nothing when a response is

called for, and moving away from group (locomotion). Moving toward teacher during a story is generally appropriate unless specifically denied by teacher. Both manipulative and locomotive motor activity are rated separately. In addition, intensity of inappropriate movement during locomotion or manipulative activity is recorded using a three point scale: (0) no motor activity; (1) minimal or slow movement or walking; (2) violent activity, hitting, running, climbing on desks, and hiding in the clothes closet. The object involved in the action-another child, toy, or nothing - is also noted. (U) Unratable motor activity includes irrelevant behavior which need not be distracting.

Scoring.

All appropriate (+) ratings are scored 1. Unratable scores (U) are 0. Visual or Verbal inappropriate ratings are scored -1. Manipulative and locomotive inappropriate behavior was weighted negatively according to its intensit,. The possible range of total scores is from +4 to -6. A sample copy of the CARS record form is appended. (See Appendix E.)

Preliminary Criterion Validity Study

A pilot study of the concurrent validity of the CARS was conducted in a first grade class. Ratings were made on 16 children while the memory subtests of the California Test of Mental Maturity were administered. Attention scores

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for three observations were obtained for each child and correlated with the sum of the raw scores of the CTMM subtests. The obtained Pearson r of .59 (SEr.=.24) was considered adequate to carry out an exploratory study using the CARS. Data have been collected for 1965-1966 and is currently being analyzed.

Extension of Observations to Higher Grades

During the 1965-1966 year, observations have been extended to the kindergarten and 1st and 2nd grades. Differences in the curricula necessitated modifications in all of the scales.

Conclusions

The observations of the experimental classes to date have pointed out deficiencies in the standardization of the curriculum among classes despite frequent teacher conferences. The observations provided information to the teacher supervisors concerning unusual classroom events which may call for immediate intervention. The scales also have been effective as an aid in eliciting teacher cooperation. The translation of their behavior into quantifiable data presented to the teachers in group seminars appeared to provide a means of pointing out the desired types of behavior in a less threatening manner than the more typical supervisor-subordinate contacts.

Such feedback concerning the extent to which the program objectives were being implemented makes more likely the modification of teacher behavior.

Future Plans

Observations directed at description of the curricula and teacher-pupil interaction are proposed for the experimental grades kindergarten through 3rd for the 1966-1967 year. Observations of 10% of the class time (1 day every 2 weeks per class, the equivalent of 2 full time observers) would yield sufficient data for determination of the extent to which program is being implemented at tri-monthly intervals. Such observations combined with periodic teacher-supervisor observations (weekly) would provide sufficient information for guidance of the individual teachers and evaluation of teacher behavior. Critical incidents which indicate effective or ineffective attempts to modify teacher behavior will be noted.

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Appendix A

TIME DISTRIBUTION RECORD (TDR)

Teacher_____ Ass't Teacher_____ Observer_____

School_____ No. of Children 16 Date 1/19/66

Activity	Time Started	Time Duration	Category	Code	Minutes Duration
Removing coats, etc.	9:00	5'	8	Play	1 55'
Circle time (recording voices on tape recorder)	9:05	15'	4	Outdoor	2 35'
Work & Play Period	9:20	55'	1	Informal Rdg.	3 12'
Clean-up time	10:15	11'	8	Circle time	4 20'
Rest at tables	10:26	2'	10	Quiet Games	5 0'
Snack Prep-aration	10:28	2'	8	Rhythm	6 2'
Snack (dis-cussion about turtle)	10:30	17'	9-9a	Story	7 6'
Informal reading period	10:47	12'	3	Routines	8 31'
Song	10:59	2'	6	Snack	9 8½'
Story	11:01	6'	7	Snack Lesson	9A 8½'
Discussion	11:07	5'	4	Rest	10 2'
Dressing to go outside	11:12	13'	8	Misc.	11 0'
Outdoor play	11:25	35'	2	Unfilled	12 0'
Dismissal	12:00				

Appendix B

INSTITUTE FOR DEVELOPMENTAL STUDIES

Location Activity Material Inventory (LAMI)

Obs._____Date_____

School P.S. 68

Materials
BO, MT, A,
HH, TA, W,
TR, DO, F,
BL, RE, CL

Loc.
1. Book C.
2. Tables
3. Sink-Easel
4. Doll C.
5. Shelves
6. Open Area

Soc.
0=alone
T=tchr
C=child

Name	Loc.	Mat.	a	Soc.	M.
Ebray, P.	4	MT	HH	0	2M
Michael F.	6	O		0	2L
Leroy D,	6	TR		0	2M
Reginald W.	4	HH		C	2L
Joey F.	3	A		0	2M
Michael B.	6	BL		0	2M
Kenny H.	2	MT		0	2M
Adrian B.	6	A		0	2L
Arden W.	2	O		T	2M
Marlene B.	3	RE		0	2M
Teachers					
C.L.	2	A		C	2M
S.H.	4	HH		0	2M

a) Column for second material

Appendix C

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Institute for Developmental Studies

Teacher Play Period Rating (TPPR)

Teacher_____ Ass't Teacher_____

Observer_____ School P.S. 175 Class Preschool

No. of Children 15 Date 1/13/66 Time 10:10

Code: Child-teacher interaction (number begin)
1--Informal Teaching; 2--Auxiliary help;
3--Control; 4--Directs; 5--Social or Role play;
6--Inaudible or Unclassifiable.

Other: (letter begin)
T--teacher-ass't teacher interaction; A--Teacher-other adult; E--Engages in activity; O--Observes; U--Unratable

	T	AT	T	AT	T	AT
	Time	9:48	Time	10:01	Time	10:10
1.		1		2		E
2.		1		3		U
3.		1		2		6
4.		1		2		2
5.		1		E		2
6.		1		2		E
7.		4		1		1-2
8.		6		6		E
9.		4		2		1
10.		5		1		1
11.		5-1		2		1
12.		2		4		2
13.		0		1		4
14.		3		3		4
15.		6		5		4
16.		3		2		2
17.		0		2		-
18.		3		5		2
19.		5-1		1		1
20.		1		1		2

Appendix D

Institute for Developmental Studies

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Teacher Observation Scale (TOS)

Teacher:_____ Ass't Teacher_____ Observer_____

School: P.S. 79 No. of Children 12

Date: 2/1/88 Time Started: 9:22 Finished: 9:27

Topic: Story - "The Hat Book"

CATEGORIES

No. of Units	IG	ER	FC	FSC	FN	FCN	C	AC
5	5	5	5			1	5	1
10	5	5	5				1	
15	3	5	2					
20	5	5						
25	5	5						
30	5							
35	5							
40	2							
45								
50								
TOTAL:	37	25	12	0	0	1	6	1

Appendix E

Institute for Developmental Studies

Child Attention Rating Scale (CARS)

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Obs: _____ Date: 3/1/86 Time Start 9:27 End 9:31

School _____ Grade: Preschool Teacher: _____

Lesson: Story

Key:
Appropriate +
Inappropriate -
Unreadable U

Motor:
None 0
Minimal 1
Gross 2

ID#	Name	Vis.	Verb.	Man. Motor Int.	Man. Motor App.	Loc. Int.	Loc. App.	Tot.	Comment
	Benjamin	+	+	0	+	0	+	4	
	Lloyd	+	+	0	+	0	+	4	
	Melvin	+	+	0	+	0	+	4	
	Gregory	+	+	0	+	0	+	4	
	James	+	+	0	+	0	+	4	
	Joseph	-	+	1	-	0	+	0	picking at fingers
	Seleta	+	+	0	+	0	+	4	
	Melinda	+	+	0	U	0	+	3	fingers in mouth
	Daphne	-	+	0	+	0	+	2	looking behind her
	Connie	-	+	0	+	0	+	2	looking to side
	Terry	+	+	0	+	0	+	4	
	Karen	+	+	0	+	0	+	4	